

Coaxial

# Bandpass Filter

ZAFBP-3200-S+

50Ω

3100 to 3300 MHz



Generic photo used for illustration purposes only  
CASE STYLE: CC1397

## The Big Deal

- High rejection, 50 dB typical
- Flat group delay 0.4 ns typical
- High power, 10.8W
- Good VSWR, 1.3:1 typical

## Product Overview

ZAFBP-3200-S+ is a 50Ω filter built into a rugged shielded case (size: 2.00" x 2.00" x 0.75") case. Covering the bandwidth of 3200 MHz  $\pm$  100 MHz, this filter offers very good rejection on both lower stopband and upper stopband. The power handling capacity is high as 10.8W at 25°C.

## Key Features

| Feature                                                                                                  | Advantages                                                                                    |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| High rejection (50 dB typical on lower side band and > 35 dB rejection till 8500 MHz on upper side band) | This enables the filter to attenuate sub harmonics and spurious signals.                      |
| Flat group delay characteristics (0.4 ns typical)                                                        | The model has a group delay flatness of 0.4 ns which helps in reducing the signal distortion. |
| High power (10.8W)                                                                                       | Suitable for base station and long-haul applications and test labs.                           |
| Good VSWR (1.3:1 typical in passband)                                                                    | This provides good matching when used with other devices.                                     |

### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
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# Bandpass Filter

50Ω 3100 to 3300 MHz

## ZAFBP-3200-S+



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CASE STYLE: CC1397  
Connectors SMA-FEMALE Model ZAFBP-3200-S+

### Features

- High rejection, 50 dB typical
- Flat group delay over passband, 0.4 ns typical
- Good VSWR, 1.5:1 typical in passband
- Connectorized package

### Applications

- Harmonic rejection
- Transmitters / receivers
- Lab use

### Electrical Specifications at 25°C

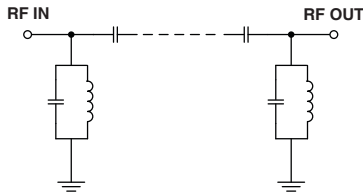
| Parameter        | F#               | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|------|------|------|------|
| Pass Band        | Center Frequency | —               | —    | 3200 | —    | MHz  |
|                  | Insertion Loss   | F1-F2           | —    | 4.0  | 5.0  | dB   |
|                  | VSWR             | F1-F2           | —    | 1.5  | 1.9  | :1   |
| Stop Band, Lower | Insertion Loss   | DC-F3           | 20   | 29   | —    | dB   |
|                  | VSWR             | DC-F3           | —    | 24   | —    | :1   |
| Stop Band, Upper | Insertion Loss   | F4-F5           | 20   | 30   | —    | dB   |
|                  | VSWR             | F4-F5           | —    | 7    | —    | :1   |

### Maximum Ratings

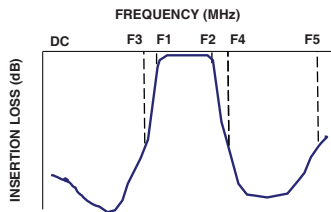
|                       |                    |
|-----------------------|--------------------|
| Operating Temperature | -55°C to 100°C     |
| Storage Temperature   | -55°C to 100°C     |
| RF Power Input*       | 10.8W max. at 25°C |

\* Derate linearly to 5.5W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

### Functional Schematic



### Typical Frequency Response

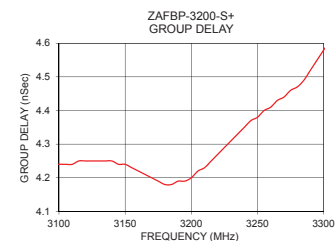
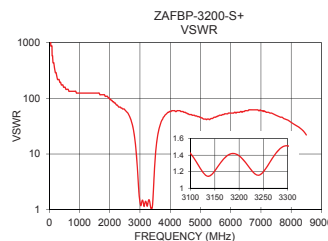
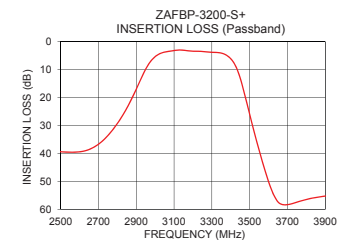
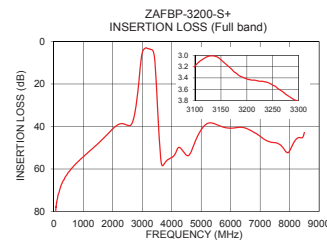


### Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 10.0            | 94.83               | 1737.18   | 3100.0          | 4.24               |
| 500.0           | 61.50               | 157.93    | 3110.0          | 4.24               |
| 1800.0          | 43.95               | 115.81    | 3120.0          | 4.25               |
| 2800.0          | 29.32               | 24.14     | 3140.0          | 4.25               |
| 2925.0          | 13.31               | 4.51      | 3150.0          | 4.24               |
| 2975.0          | 7.14                | 1.76      | 3160.0          | 4.22               |
| 3000.0          | 5.37                | 1.38      | 3170.0          | 4.20               |
| 3100.0          | 3.19                | 1.42      | 3180.0          | 4.18               |
| 3200.0          | 3.42                | 1.39      | 3190.0          | 4.19               |
| 3300.0          | 3.82                | 1.51      | 3195.0          | 4.19               |
| 3400.0          | 6.11                | 1.06      | 3200.0          | 4.20               |
| 3450.0          | 13.05               | 2.57      | 3210.0          | 4.23               |
| 3500.0          | 26.02               | 8.01      | 3220.0          | 4.27               |
| 3550.0          | 38.85               | 15.81     | 3230.0          | 4.31               |
| 3600.0          | 50.12               | 23.81     | 3240.0          | 4.35               |
| 3620.0          | 53.71               | 26.74     | 3250.0          | 4.38               |
| 3700.0          | 58.37               | 37.77     | 3260.0          | 4.41               |
| 4700.0          | 50.44               | 51.10     | 3270.0          | 4.44               |
| 6000.0          | 40.79               | 54.29     | 3280.0          | 4.47               |
| 8500.0          | 42.84               | 22.00     | 3300.0          | 4.58               |

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



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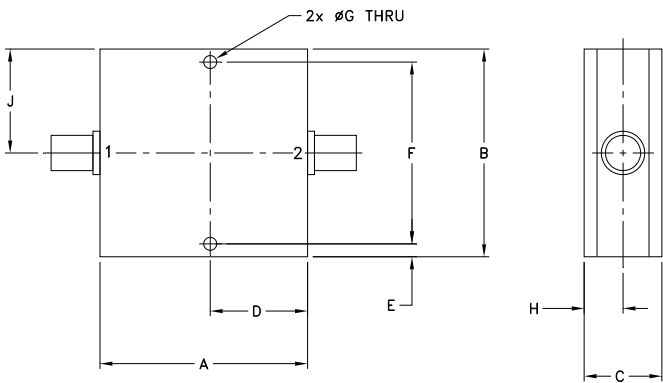
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ZAFBP-3200-S+  
EDR-9449/1AU  
RAV/URJ/NY  
200121  
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Coaxial Connections

|          |            |
|----------|------------|
| PORT - 1 | SMA-FEMALE |
| PORT - 2 | SMA-FEMALE |

Outline Drawing



Outline Dimensions ( inch  
mm )

|       |       |       |       |      |       |
|-------|-------|-------|-------|------|-------|
| A     | B     | C     | D     | E    | F     |
| 2.00  | 2.00  | .75   | .938  | .13  | 1.750 |
| 50.80 | 50.80 | 19.05 | 23.83 | 3.30 | 44.45 |
| G     | H     | J     |       |      | wt    |
| .125  | .38   | 1.00  |       |      | grams |
| 3.18  | 9.65  | 25.40 |       |      | 100.0 |

Note: Please refer to case style drawing for details

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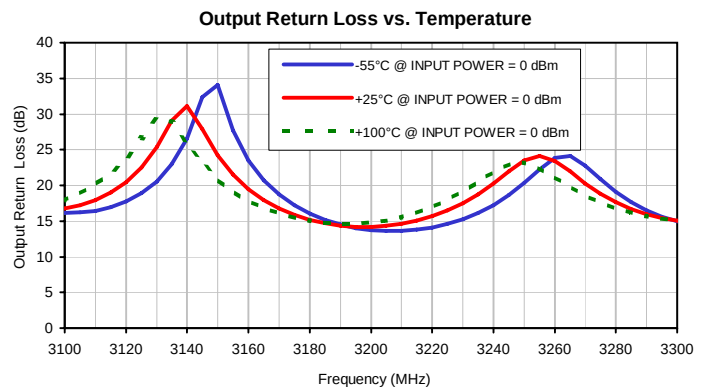
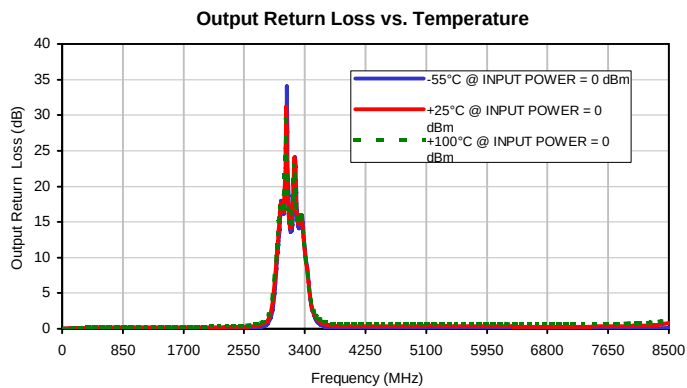
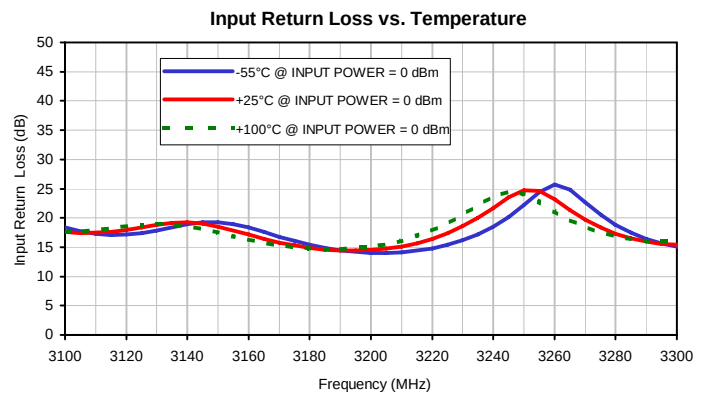
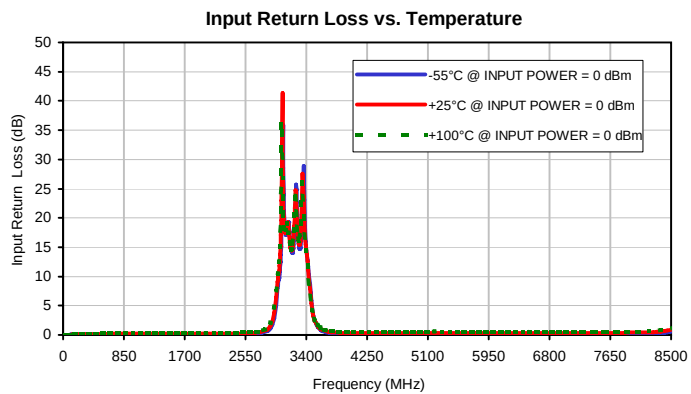
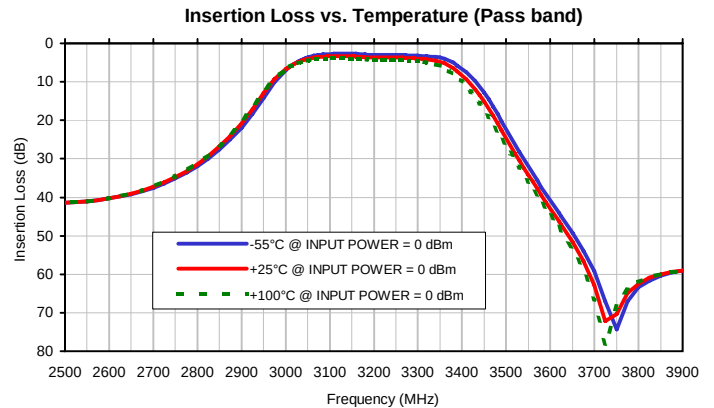
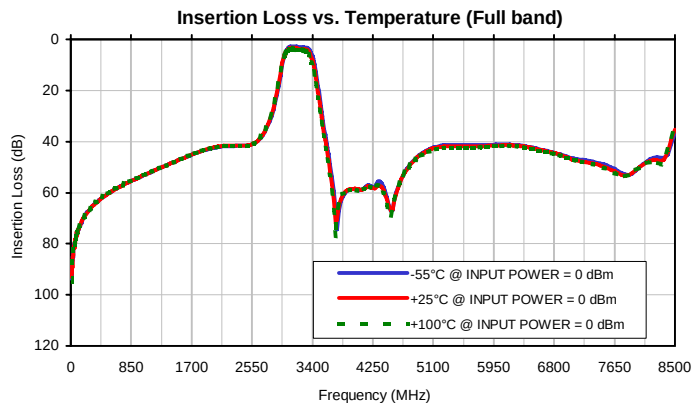
## Typical Performance Data

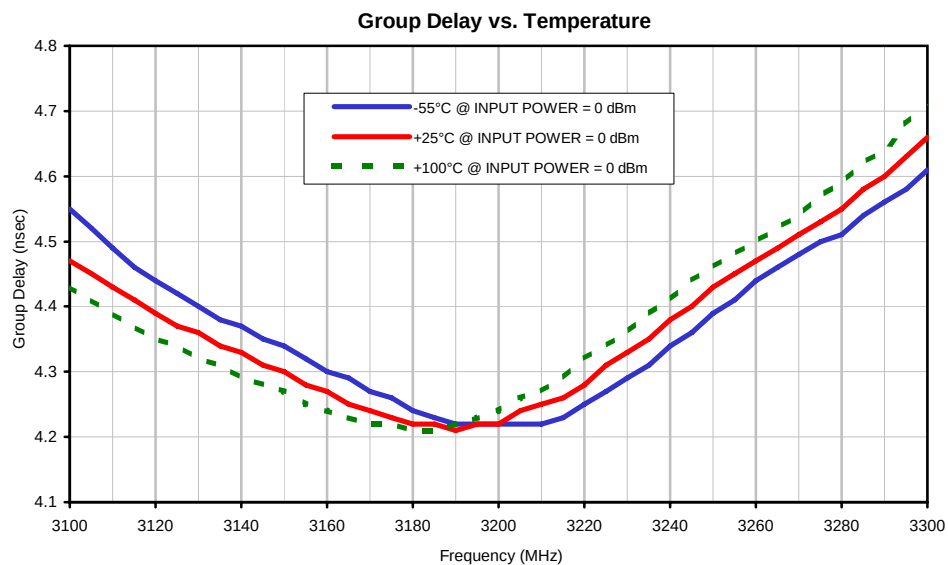
| FREQ.  | INSERTION LOSS |        |         | INPUT RETURN LOSS |        |         | OUTPUT RETURN LOSS |        |         |
|--------|----------------|--------|---------|-------------------|--------|---------|--------------------|--------|---------|
|        | (dB)           |        |         | (dB)              |        |         | (dB)               |        |         |
|        | @-55°C         | @+25°C | @+100°C | @-55°C            | @+25°C | @+100°C | @-55°C             | @+25°C | @+100°C |
| 10.0   | 93.75          | 92.84  | 95.02   | 0.01              | 0.00   | 0.00    | 0.02               | 0.00   | 0.01    |
| 50.0   | 79.64          | 81.65  | 80.33   | 0.02              | 0.03   | 0.03    | 0.01               | 0.02   | 0.04    |
| 100.0  | 74.85          | 75.47  | 74.76   | 0.05              | 0.05   | 0.05    | 0.03               | 0.04   | 0.04    |
| 500.0  | 60.80          | 60.93  | 60.79   | 0.12              | 0.16   | 0.17    | 0.07               | 0.15   | 0.18    |
| 600.0  | 58.91          | 59.01  | 59.08   | 0.13              | 0.16   | 0.19    | 0.06               | 0.15   | 0.19    |
| 800.0  | 56.06          | 56.03  | 56.10   | 0.13              | 0.17   | 0.20    | 0.05               | 0.16   | 0.21    |
| 1000.0 | 53.52          | 53.46  | 53.49   | 0.13              | 0.17   | 0.21    | 0.03               | 0.16   | 0.22    |
| 1200.0 | 51.06          | 51.01  | 51.00   | 0.12              | 0.17   | 0.21    | 0.01               | 0.15   | 0.22    |
| 1500.0 | 47.46          | 47.43  | 47.42   | 0.12              | 0.18   | 0.23    | 0.01               | 0.16   | 0.24    |
| 1600.0 | 46.32          | 46.28  | 46.26   | 0.11              | 0.18   | 0.23    | 0.01               | 0.16   | 0.25    |
| 1800.0 | 44.17          | 44.06  | 44.15   | 0.11              | 0.19   | 0.25    | 0.02               | 0.17   | 0.28    |
| 1900.0 | 43.27          | 43.08  | 43.22   | 0.12              | 0.20   | 0.26    | 0.02               | 0.19   | 0.30    |
| 2000.0 | 42.54          | 42.34  | 42.52   | 0.12              | 0.20   | 0.28    | 0.02               | 0.19   | 0.31    |
| 2100.0 | 42.04          | 41.80  | 42.04   | 0.13              | 0.22   | 0.29    | 0.02               | 0.20   | 0.34    |
| 2200.0 | 41.74          | 41.57  | 41.84   | 0.13              | 0.23   | 0.31    | 0.01               | 0.22   | 0.35    |
| 2300.0 | 41.73          | 41.55  | 41.79   | 0.14              | 0.24   | 0.33    | 0.02               | 0.23   | 0.38    |
| 2400.0 | 41.69          | 41.59  | 41.85   | 0.14              | 0.25   | 0.36    | 0.01               | 0.24   | 0.39    |
| 2500.0 | 41.39          | 41.37  | 41.49   | 0.15              | 0.27   | 0.39    | 0.00               | 0.26   | 0.44    |
| 2600.0 | 40.29          | 40.30  | 40.26   | 0.18              | 0.31   | 0.44    | 0.03               | 0.30   | 0.49    |
| 2700.0 | 37.52          | 37.32  | 37.17   | 0.25              | 0.39   | 0.55    | 0.08               | 0.39   | 0.61    |
| 2800.0 | 31.96          | 31.39  | 31.13   | 0.43              | 0.61   | 0.82    | 0.25               | 0.60   | 0.85    |
| 2850.0 | 27.63          | 26.85  | 26.43   | 0.63              | 0.89   | 1.14    | 0.46               | 0.86   | 1.17    |
| 2900.0 | 21.89          | 20.78  | 20.14   | 1.14              | 1.57   | 1.99    | 0.95               | 1.51   | 1.99    |
| 2950.0 | 14.27          | 13.04  | 12.39   | 2.84              | 3.87   | 4.81    | 2.60               | 3.77   | 4.80    |
| 3000.0 | 6.95           | 6.70   | 6.72    | 8.02              | 9.12   | 10.05   | 8.49               | 9.71   | 10.53   |
| 3020.0 | 5.26           | 5.33   | 5.53    | 9.79              | 11.06  | 12.63   | 10.73              | 11.67  | 12.67   |
| 3040.0 | 4.12           | 4.39   | 4.73    | 12.48             | 15.23  | 18.94   | 13.08              | 14.53  | 15.82   |
| 3050.0 | 3.70           | 4.05   | 4.45    | 15.11             | 19.53  | 26.71   | 14.89              | 16.28  | 17.12   |
| 3080.0 | 2.97           | 3.51   | 4.04    | 28.59             | 22.04  | 19.52   | 17.58              | 16.73  | 16.69   |
| 3100.0 | 2.79           | 3.37   | 3.92    | 18.39             | 17.64  | 17.63   | 16.17              | 16.73  | 17.97   |
| 3110.0 | 2.73           | 3.33   | 3.89    | 17.24             | 17.46  | 17.96   | 16.45              | 17.96  | 20.07   |
| 3120.0 | 2.69           | 3.30   | 3.88    | 17.16             | 17.99  | 18.60   | 17.74              | 20.48  | 23.85   |
| 3130.0 | 2.66           | 3.29   | 3.89    | 17.87             | 18.82  | 18.99   | 20.58              | 25.35  | 29.34   |
| 3140.0 | 2.66           | 3.31   | 3.93    | 18.91             | 19.22  | 18.58   | 26.54              | 31.15  | 25.92   |
| 3150.0 | 2.68           | 3.36   | 3.99    | 19.29             | 18.51  | 17.49   | 34.08              | 24.18  | 20.88   |
| 3160.0 | 2.73           | 3.43   | 4.07    | 18.36             | 17.14  | 16.28   | 23.50              | 19.47  | 17.88   |
| 3170.0 | 2.81           | 3.51   | 4.15    | 16.78             | 15.80  | 15.31   | 18.74              | 16.80  | 16.08   |
| 3180.0 | 2.89           | 3.59   | 4.22    | 15.39             | 14.88  | 14.77   | 16.06              | 15.20  | 15.04   |
| 3190.0 | 2.97           | 3.65   | 4.26    | 14.45             | 14.43  | 14.68   | 14.51              | 14.38  | 14.61   |
| 3200.0 | 3.03           | 3.68   | 4.29    | 14.03             | 14.51  | 15.12   | 13.74              | 14.19  | 14.76   |
| 3210.0 | 3.06           | 3.70   | 4.30    | 14.12             | 15.14  | 16.13   | 13.62              | 14.61  | 15.52   |
| 3220.0 | 3.07           | 3.69   | 4.29    | 14.80             | 16.43  | 17.87   | 14.11              | 15.69  | 16.99   |
| 3230.0 | 3.06           | 3.68   | 4.28    | 16.17             | 18.55  | 20.50   | 15.25              | 17.50  | 19.18   |
| 3240.0 | 3.04           | 3.67   | 4.28    | 18.51             | 21.71  | 23.65   | 17.23              | 20.25  | 21.92   |
| 3250.0 | 3.02           | 3.68   | 4.31    | 22.18             | 24.74  | 24.06   | 20.34              | 23.46  | 23.19   |
| 3260.0 | 3.03           | 3.71   | 4.36    | 25.70             | 23.15  | 21.12   | 23.88              | 23.45  | 21.17   |
| 3270.0 | 3.06           | 3.75   | 4.42    | 22.66             | 19.70  | 18.46   | 22.76              | 20.29  | 18.59   |
| 3280.0 | 3.11           | 3.82   | 4.50    | 18.82             | 17.29  | 16.84   | 19.11              | 17.64  | 16.74   |
| 3290.0 | 3.17           | 3.89   | 4.58    | 16.44             | 15.92  | 16.12   | 16.53              | 15.94  | 15.66   |
| 3300.0 | 3.24           | 3.96   | 4.67    | 15.15             | 15.38  | 16.18   | 15.01              | 15.03  | 15.19   |
| 3400.0 | 6.59           | 8.26   | 10.01   | 14.48             | 14.51  | 14.43   | 11.28              | 11.01  | 11.00   |
| 3500.0 | 22.33          | 24.68  | 26.67   | 3.32              | 3.17   | 3.14    | 2.92               | 3.10   | 3.25    |
| 3520.0 | 26.30          | 28.59  | 30.46   | 2.37              | 2.36   | 2.42    | 2.13               | 2.38   | 2.53    |
| 3540.0 | 30.14          | 32.37  | 34.12   | 1.76              | 1.82   | 1.93    | 1.59               | 1.87   | 2.05    |
| 3550.0 | 32.00          | 34.22  | 35.89   | 1.53              | 1.62   | 1.74    | 1.37               | 1.68   | 1.86    |
| 3600.0 | 40.75          | 42.86  | 44.45   | 0.88              | 1.02   | 1.18    | 0.73               | 1.06   | 1.30    |
| 3700.0 | 59.28          | 62.83  | 66.77   | 0.41              | 0.58   | 0.75    | 0.23               | 0.60   | 0.87    |
| 4000.0 | 58.53          | 58.46  | 58.94   | 0.15              | 0.33   | 0.52    | 0.05               | 0.34   | 0.64    |
| 4500.0 | 67.21          | 66.83  | 69.70   | 0.11              | 0.31   | 0.53    | 0.08               | 0.34   | 0.66    |
| 5000.0 | 43.57          | 43.88  | 44.35   | 0.16              | 0.37   | 0.59    | 0.04               | 0.40   | 0.72    |
| 5500.0 | 41.26          | 41.79  | 42.28   | 0.15              | 0.36   | 0.57    | 0.07               | 0.38   | 0.72    |
| 6000.0 | 41.14          | 41.55  | 41.84   | 0.14              | 0.34   | 0.55    | 0.12               | 0.34   | 0.68    |
| 6500.0 | 42.45          | 42.57  | 42.95   | 0.12              | 0.31   | 0.50    | 0.19               | 0.30   | 0.66    |
| 7000.0 | 46.16          | 46.42  | 46.72   | 0.12              | 0.32   | 0.47    | 0.21               | 0.30   | 0.65    |
| 7500.0 | 48.96          | 49.79  | 50.27   | 0.14              | 0.36   | 0.50    | 0.22               | 0.34   | 0.71    |
| 8000.0 | 50.10          | 50.01  | 50.23   | 0.19              | 0.42   | 0.58    | 0.15               | 0.41   | 0.78    |
| 8500.0 | 36.67          | 35.24  | 34.56   | 0.52              | 0.87   | 1.17    | 0.20               | 0.85   | 1.28    |

*Typical Performance Data*

| FREQ.  | GROUP DELAY |        |         |
|--------|-------------|--------|---------|
| (MHz)  | (nsec)      |        |         |
|        | @-55°C      | @+25°C | @+100°C |
| 3100.0 | 4.55        | 4.47   | 4.43    |
| 3105.0 | 4.52        | 4.45   | 4.41    |
| 3110.0 | 4.49        | 4.43   | 4.39    |
| 3115.0 | 4.46        | 4.41   | 4.37    |
| 3120.0 | 4.44        | 4.39   | 4.35    |
| 3125.0 | 4.42        | 4.37   | 4.34    |
| 3130.0 | 4.40        | 4.36   | 4.32    |
| 3135.0 | 4.38        | 4.34   | 4.31    |
| 3140.0 | 4.37        | 4.33   | 4.29    |
| 3145.0 | 4.35        | 4.31   | 4.28    |
| 3150.0 | 4.34        | 4.30   | 4.27    |
| 3155.0 | 4.32        | 4.28   | 4.25    |
| 3160.0 | 4.30        | 4.27   | 4.24    |
| 3165.0 | 4.29        | 4.25   | 4.23    |
| 3170.0 | 4.27        | 4.24   | 4.22    |
| 3175.0 | 4.26        | 4.23   | 4.22    |
| 3180.0 | 4.24        | 4.22   | 4.21    |
| 3185.0 | 4.23        | 4.22   | 4.21    |
| 3190.0 | 4.22        | 4.21   | 4.22    |
| 3195.0 | 4.22        | 4.22   | 4.23    |
| 3200.0 | 4.22        | 4.22   | 4.24    |
| 3205.0 | 4.22        | 4.24   | 4.26    |
| 3210.0 | 4.22        | 4.25   | 4.27    |
| 3215.0 | 4.23        | 4.26   | 4.29    |
| 3220.0 | 4.25        | 4.28   | 4.32    |
| 3225.0 | 4.27        | 4.31   | 4.34    |
| 3230.0 | 4.29        | 4.33   | 4.36    |
| 3235.0 | 4.31        | 4.35   | 4.39    |
| 3240.0 | 4.34        | 4.38   | 4.41    |
| 3245.0 | 4.36        | 4.40   | 4.44    |
| 3250.0 | 4.39        | 4.43   | 4.46    |
| 3255.0 | 4.41        | 4.45   | 4.48    |
| 3260.0 | 4.44        | 4.47   | 4.50    |
| 3265.0 | 4.46        | 4.49   | 4.52    |
| 3270.0 | 4.48        | 4.51   | 4.54    |
| 3275.0 | 4.50        | 4.53   | 4.57    |
| 3280.0 | 4.51        | 4.55   | 4.59    |
| 3285.0 | 4.54        | 4.58   | 4.62    |
| 3290.0 | 4.56        | 4.60   | 4.64    |
| 3295.0 | 4.58        | 4.63   | 4.68    |
| 3300.0 | 4.61        | 4.66   | 4.71    |

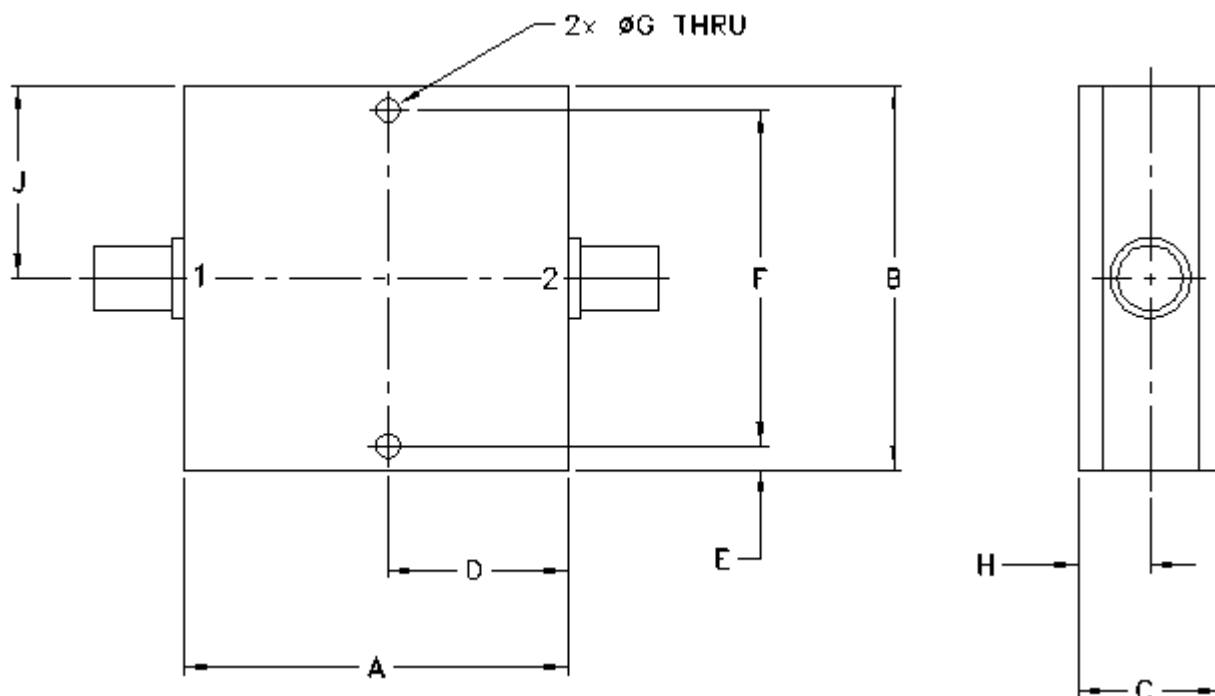
## Typical Performance Curves



*Typical Performance Curves*

## Outline Dimensions

CC1397



| CASE#  | A               | B               | C              | D               | E             | F                | G              | H             | J              | WT. GRAMS |
|--------|-----------------|-----------------|----------------|-----------------|---------------|------------------|----------------|---------------|----------------|-----------|
| CC1397 | 2.00<br>(50.80) | 2.00<br>(50.80) | .75<br>(19.05) | .938<br>(23.83) | .13<br>(3.30) | 1.750<br>(44.45) | .125<br>(3.17) | .38<br>(9.65) | 1.00<br>(25.4) | 100       |

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .03$ ; 3 Pl.  $\pm .015$

### Notes:

1. Case material: Aluminum alloy.
2. Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

RF/IF MICROWAVE COMPONENTS



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification              | Test/Inspection Condition                                                                               | Reference/Spec                                        |
|----------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Operating Temperature      | -55° to 100°C<br>Ambient Environment                                                                    | Individual Model Data Sheet                           |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment                                                                   | Individual Model Data Sheet                           |
| Humidity                   | 90 to 95% RH, 40°C, 96 hours;<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103, Condition B                  |
| Thermal Shock              | -55° to 100°C, 100 cycles                                                                               | MIL-STD-202, Method 107, Condition A-3, except +100°C |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)                     | MIL-STD-202, Method 204, Condition D                  |
| Mechanical Shock           | 50g, 11ms half-sine, 3 shocks each direction 3 axes (total 18)                                          | MIL-STD-202, Method 213, Condition A                  |